MAIL STOP APPEAL
BRIEF - PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants:	R. Timmis et al.	Attorney Docket No.	WEYE116514/22822A
Application No:	09/700,037	Group Art Unit:	1651
Filed:	July 2, 2001	Examiner:	L.B. Lankford, Jr.
Title:	METHODS FOR CLASSIFICATION OF SOMATIC EMBRYOS		

APPELLANTS' REPLY BRIEF

Seattle, Washington
August 1, 2006

TO THE COMMISSIONER FOR PATENTS:

Responsive to the Examiner's Answer, appellants respectfully submit the following.

At page 9 of the Answer, the Examiner stated as follows:

> It would appear to require that to demonstrate the possession of the claimed invention, one would have had to taken the raw spectral data of some plant embryos then monitor said embryos to see which could germinate. Germination (or better yet development into a full healthy plant) would be the minimum test for embryo quality. Upon germination, one could then look back at the spectral data and properly classify the data from the germinated embryos as the data of a "quality embryo." At this point, a classification model could properly be constructed.

(Examiner's Answer, page 9, second paragraph.)

This is an accurate description of an embodiment of the present invention, described in the specification as below:

> The classification model is deduced from a "training" data set of multiple images of plant embryos or plant embryo organs acquired from embryos having *known embryo quality*. Embryos providing the training set images are classified as acceptable or unacceptable based on biological fact data such as morphological similarity to normal zygotic embryos or *proven ability to germinate or convert to plants*.

(Specification, page 9, lines 9-14, emphasis added.)

In the above description, classification based on "proven ability to germinate or convert to plants" corresponds to classification based on monitoring to see which embryo could germinate, as stated by the Examiner.

At page 5 of the Answer, the Examiner stated that:

> It is not in the creation of such a model that appellant has failed to adequately describe or enable in their claimed invention *but in the application of said model.* As such, the invention as a whole has not been adequately described or enabled.
>
> The most clear cut way to show possession of an invention is a reduction to practice. Tables 7-11 (and the corresponding sections) in the specification discuss the creation of a classification model and discuss the application thereof however at no point does applicant's specification clearly show that application selected a particular embryo based on their classification model and that said embryo reacted (i.e. germinated) in such a way as predicted by the model. That application and end result would appear to be what applicant's invention requires. Without such a demonstration, there is no reduction to practice.

(Examiner's Answer, page 5, first and second paragraphs, emphasis added.)

Quite contrary to the Examiner's finding above, the specification describes an actual reduction to practice of various exemplary embodiments of the present invention in "Examples 2-5" described in pages 22-45. For example, "Example 2" describes that:

> The embryos that were not included in the training data set were then regressed on the two sets of principal components exactly as done in multiple regression. For each regression the residual mean square error was calculated. A test embryo was classified as having either good or bad embryo visual quality depending on which category has the smaller residual mean square error. Using this method test embryos were classified based on the longitudinal top view of an embryo.

(Specification, page 23, lines 18-23.)

The above-quoted passage describes that a classification model deduced from the "training data set" was then tested using "the embryos that were not included in the training data set," or a "test embryo." In fact, Tables 1-11 included in the specification each particularly shows the results of the application of a classification model, in terms of "Percent of ... Embryos Correctly Classified" or "Number correctly classified/number tested." Thus, contrary to the Examiner's finding, the specification describes the *application* of a classification model to test its effectiveness.

At page 6 of the Answer, the Examiner stated as follows:

> There appears to be no adequate description for the specific qualities applicant claims in claim 41. The specification appears to be speculative in the ability to use spectral data to classify/select an embryo with any or all of the claimed properties. All of applicant's data and examples discuss only the correlation between "quality" and morphology there is nothing to convey to one of skill in the art that the properties in claim 41 could be reasonably predicted using a spectral classification model.

(Examiner's Answer, page 6, last paragraph - page 7, first paragraph.)

As discussed above, the specification clearly describes the invention to indicate that the applicants possessed the invention directed to both *creating* and *applying* a classification model to classify embryos according to their putative embryo quality. Further, each of the quantifiable characteristics listed in Claim 41 is a measure of embryo quality, as explicitly described in page 7, line 28-page 8, line 2 of the specification. Since the specification describes creating and applying a classification model to classify embryos according to their putative embryo quality, it follows that the specification also describes creating and applying a classification model to classify embryos according to one or more particular measures (or quantifiable characteristics) of their putative embryo quality as listed in Claim 41.

Because the specification describes the invention to indicate that the applicants possessed the invention directed to creating and applying a classification model to classify embryos

according to their putative embryo quality, it follows logically that the specification also describes the invention in such a way so as to enable one skilled in the art to practice the invention.

Respectfully submitted,

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